



Getting Started in Computer Science Freshmen Students

Department of Computer Science

<http://cs.gmu.edu/>

Volgenau School of Engineering

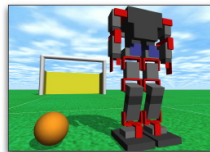
Agenda

PLEASE SIGN IN !!

- Department information
- General information
- Program information
 - The BS CS Degree Program
 - The BS ACS Degree Program
- What do I register for?
- Questions?

Department Info

- The CS Department office is located in the Nguyen Engineering (ENGR) Building, Room 4300
 - Department Chair: Dr. Sanjeev Setia
 - Acting Associate Chair: Dr. Jan Allbeck – oversees the undergraduate programs
 - CS Undergraduate Advisors: Ms. Kara Smith and Ms. Katie Doyle
 - There are over 45 full time Faculty in the Department and their offices are located on the 4th and 5th floors of the ENGR building
- We're part of the Volgenau School of Engineering (VSE) which contains the following Departments:
 - **COMPUTER SCIENCE**
 - Bioengineering
 - Civil & Environmental Engineering
 - Electrical and Computer Engineering
 - Information Sciences and Technology
 - Mechanical Engineering
 - Statistics
 - Systems Engineering & Operations Research



General Information

- Activate your Mason ID and password at password.gmu.edu
 - All information to/from you and Mason is sent to your Mason email
- The CS Department website is cs.gmu.edu
 - It contains Student FAQs, contact information for faculty, course syllabi, jobs and student organization information
- The Mason Registration system is called PatriotWeb: patriotweb.gmu.edu
 - Use this website to register for classes
 - Use this website to check your degree progress (DegreeWorks)
 - Use this website to check your advanced placement or transfer credit
- The Mason Catalog is online: catalog.gmu.edu
 - Check it frequently for reference to your degree requirements

- The Mason Transfer Admissions website is: admissions.gmu.edu/transfer
 - Check it for AP/IB and Transfer equivalencies: <http://admissions.gmu.edu/transfer/transferCreditSearch.asp>
- George Mason University has an Honor Code !!
 - Make sure you understand what your responsibilities are.
 - Go to the Mason Honor Code website:
 - oai.gmu.edu
- The Computer Science Department also has an Honor Code for Programming Projects.
 - It is strictly enforced!
 - Look for it on the Honor Code page of the CS website: <http://cs.gmu.edu/wiki/pmwiki.php/HonorCode/HomePage>

Undergraduate Degree Programs

- We offer two undergraduate BS degrees:
 - BS Computer Science (BS CS)
 - BS Applied Computer Science (BS ACS)
- Both degrees require a minimum of 120 credit hours = 4 years full-time
- Other program options:
 - Software Engineering Minor (16 credit hours)
 - BS/Accelerated MS options (144 credit hours)

Course Policies

- Course designations at Mason:
 - 100 level courses are typically for freshmen
 - 200 level courses are typically for sophomores
 - 300 level courses are typically for juniors
 - 400 level courses are typically for seniors
- Courses must be taken in sequence
 - Almost every course has a prerequisite chain
 - Prerequisites are enforced by the registration system
- You *must* earn a C or better in a CS or MATH class in order to take the follow-on course
- Courses offered by the department may only be taken a most three times; failure to pass a required Math or CS course after three attempts results in termination from the major

▪ Selective Withdrawal:

Every GMU undergrad is allowed three selective withdrawals where you can to drop a course after the drop date (but before the selective withdrawal deadline) - use these wisely!

▪ One C-/D rule:

Computer science majors are permitted to use one "C-" or "D" grade within Major coursework toward graduation, as long as that course is not a prerequisite for another class.

BS CS Educational Objectives

- The BS CS program is accredited by Computing Accreditation Commission of ABET (www.abet.org)
- The objectives of the BS CS degree are to provide our graduates with
 - *A foundation for successful careers in industry:*
 - graduates will have a broad understanding of the fundamental concepts, methodologies and tools, and applications of computer science.
 - *A foundation for graduate study:*
 - graduates of the program will have the academic preparation for successful completion of rigorous graduate programs.
 - *Professional preparation:*
 - graduates will have effective written and oral communication skills, and be able to work collaboratively in a professional and ethical manner.

The BS CS Curriculum

- Mason Core requirements (21 credits)
 - *Foundation:* English composition courses
 - *Core:* Literature, Western Civ., Social & Behavioral Sciences, Global Understanding, Fine Arts
- Major requirements (95 credits)
 - Required CS courses (33 credits)
 - Mathematics and Engineering courses (23 credits)
 - CS-Senior elective courses (15 credits)
 - CS-Related elective courses (6 credits)
 - Natural Sciences (12 credits)
 - Communications 100 - Public Speaking (3 credits)
 - Humanities (3 credits)
- General Electives (4 credits)
 - Note: Physical activity and remedial math classes do not count towards graduation

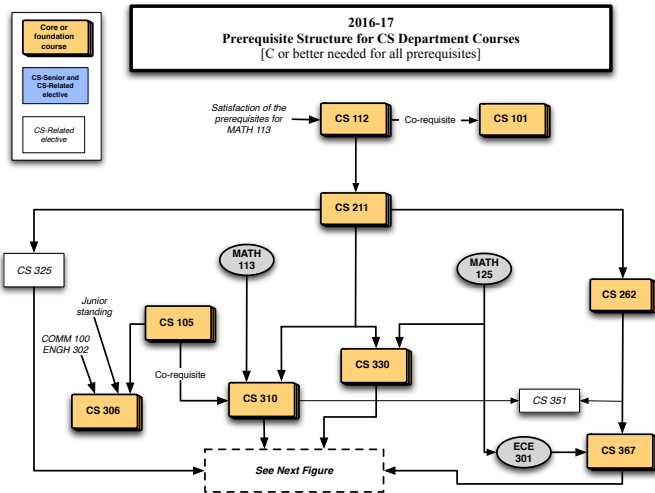
Major Requirements (CS Core)

- CS 101
 - Preview of Computer Science
- CS 105, CS 306
 - Ethics & Society; Ethics & Law for the Computing Professional
- CS 112, 211, 310
 - Introduction to Programming; Object-Oriented Programming; Data Structures
- CS 262, 367, 465; ECE 301
 - Intro to Low-level Programming; Computer Systems and Programming; Computer Systems Architecture; Digital Electronics
- CS 321
 - Software Engineering
- CS 330, 483
 - Formal Methods & Models, Analysis of Algorithms

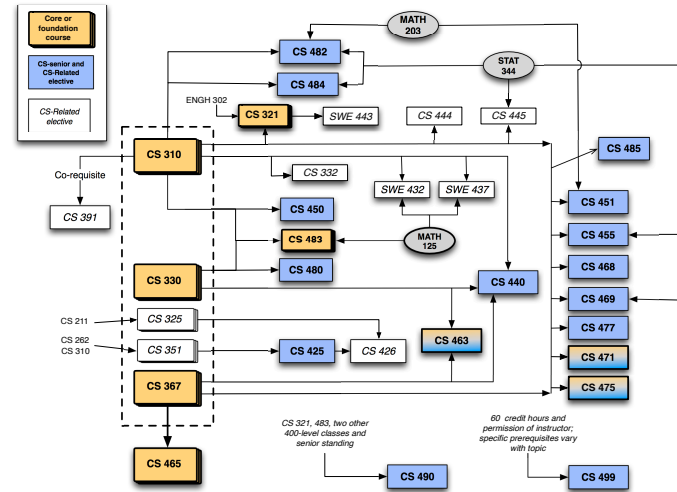
Five CS-Senior electives :

- CS 463 or 471 or 475
- Four additional courses chosen from
 - CS 425 - Game Programming I
 - CS 440 - Language Processors and Programming Environments
 - CS 450 - Database Concepts
 - CS 451 - Computer Graphics
 - CS 455 - Computer Communications and Networking
 - CS 463 - Comparative Programming Languages
 - CS 468 - Secure Programming and Systems
 - CS 469 - Security Engineering
 - CS 471 - Operating Systems
 - CS 475 - Concurrent and Distributed Systems
 - CS 477 - Mobile Application Development
 - CS 480 - Introduction to Artificial Intelligence
 - CS 482 - Computer Vision
 - CS 484 - Data Mining
 - CS 485 - Autonomous Robotics
 - CS 490 - Design Exhibition
 - CS 499 - Special Topics in Computer Science*
 - MATH 446 - Numerical Analysis I or OR 481 - Numerical Methods in Engineering

Course Prerequisite Chains

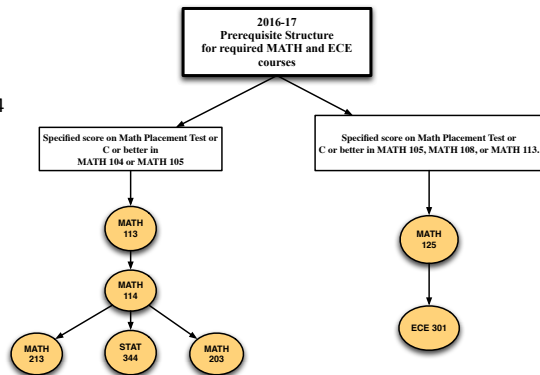


Prerequisite Chains



Major Requirements (Math & ECE)

- MATH 113, 114, 213
 - Calculus I, II, III
- MATH 125, 203, STAT 344
 - Discrete Math,
 - Linear Algebra
 - Prob/Stat for Engineers
- ECE 301
 - Digital Electronics



Major Requirements (continued)

- **Natural Science:** 12 credits that must include a two-semester laboratory sequence chosen from:
 - ASTR 111 (3)/112 (1), 113 (3)/114 (1)
 - BIOL 103 (4), 104 (4)
 - CHEM 211 (3)/213 (1), 212 (3)/214 (1)
 - GEOL 101 (4), 102 (4)
 - PHYS 160 (3)/161 (1), 260 (3)/261 (1)
 - EVPP 110 (4), 111 (4)
- **CS Related elective courses**
 - Two courses selected from an approved list of ECE, OR, PHIL, STAT, SWE, SYST, MATH, or CS courses (see catalog)
- **Humanities:** (3 additional credits)

BS Applied CS Degree

- BS Applied Computer Science
 - Created for students who want to work in one of the many disciplines that require advanced computing techniques.
 - Concentrations: bioinformatics, game design, geography, and software engineering
 - Students take foundation and core CS courses along with foundation and core courses in the concentration area.

BS ACS Degree Requirements

- All concentrations share the same common foundation requirements as the BS CS:
 - **CS 101** (Preview of Computer Science)
 - **CS 105** (Computer Ethics & Society)
 - **CS 112** (Introduction to Computer Programming)
 - **CS 211** (Object-Oriented Programming)
 - **MATH 113, MATH 114, MATH 125, MATH 203, STAT 344**
Calculus I, II, Discrete Mathematics, Linear Algebra, Prob & Stat for Engineers
- All concentrations share the same common core requirements as the BS CS:
 - **CS 262** (Intro to Low-Level Programming) / **ECE 301** (Digital Electronics)
 - **CS 306** (Law and Ethics for the Computing Professional)
 - **CS 310** (Data Structures) / **CS 330** (Formal Methods and Models)
 - **CS 367** (Computer Systems & Programming)
 - **CS 321** (Software Engineering)
 - **CS 465** (Computer Systems Architecture)
 - **CS 483** (Analysis of Algorithms)
- All concentrations must include one additional CS course numbered above 400

Concentration Requirements

- Concentration in Bioinformatics*
 - Foundation: PHYS 160/161, CHEM 201, BIOL 213, STAT 344
 - Core: BINF 450, BIOL 482, BIOL 580; CS 306, 444, 445, 450
 - Two approved electives related to bioinformatics
- Concentration in Computer Game Design*
 - Foundation: CS 225, 306, 325, 351; AVT 104; STAT 344
 - Core: CS 425, 426, 451; AVT 382, 383
 - One approved elective related to game design
 - PHYS 160/161, one additional lab science course

*Not all concentration courses are offered every semester

- Concentration in Geography*
 - Foundation: GGS101, 102, 103, 110, 300; STAT 344
 - Core: CS 306; GGS 310, 311, 411, 412, 416, 463
 - One GGS course numbered above 300
- Concentration in Software Engineering*
 - Foundation: STAT 344; CS 306
 - Core: SWE 205, 301, 401; CS 332, SWE 437
 - Five courses chosen from:
 - CS 450, 455, 463, 468, 471, 475; SWE 432, 443
 - ENGL 388 & one of the following:
 - (PSYC 333, COMM 320, COMM 335)

*Not all concentration courses are offered every semester

What Do I Register For?

- If your Math Placement Score qualifies you for MATH 113 (Calculus I), then you should sign up for
 - CS 101 (Preview of Computer Science)
 - CS 112 (Introduction to Computer Science)
 - MATH 113 (Calculus I)
 - Mason Core classes (See the Sample Schedule handouts)
 - Classes needed for your ACS concentration (See the Sample Schedules handouts) if you are ACS major
- If your score does not qualify you for MATH 113, then
 - You should register for MATH 105 (Pre-Calculus) or MATH 104 (Trig & Transcendental Functions) or MATH 123 (Calculus with Algebra/Trig Part A) as appropriate
 - You should register for courses that satisfy the Mason Core requirements instead of taking CS classes (see the Sample Schedule handout for students who start with Math 104 or 105)
 - Next semester, if you have earned a C or better in MATH 104/105/123 or passed the Placement Test, you should register for
 - CS 101
 - CS 112
 - MATH 113
 - ...

Freshman FAQs

- What should I do if I had AP or IB coursework in High School?
 - Depending on your score,
 - You might receive Mason credit for CS 112 if you took the AP Computer Science exam
 - You might receive Mason credit for MATH 113 if you took the AP Math exams
 - Check the admissions.gmu.edu/transfer website for score equivalencies
 - Make sure Mason has evidence that you received AP or IB credit or you will not be able to register for follow on courses
- Can I test out of a computer science class?
 - You may *apply* to take a test for CS 211 equivalency if you received a 5 on the CS AP A exam *and* the Department agrees that you have the necessary knowledge to attempt the exam.
 - Contact the Department (csadmin@cs.gmu.edu) to set up an interview.
 - You must *pass* the test to be waived from CS 211. You will need to replace the credits with a higher level CS class.

Mason Core

- How do I select Mason Core courses?
- The catalog has a list of courses for each category: e.g. Fine Arts, Social & Behavioral Sciences, Literature, etc.
- Consult the online Mason catalog under *Mason Core* here:
 - catalog.gmu.edu
 - It lists the courses that qualify for each of the Core categories

Getting Help

- After classes begin, you will be assigned a CS Faculty Advisor. We will email you to let you know who your Faculty Advisor is.
- If you have concerns about meeting the prerequisites for a class, contact the CS Department.
- If you are in need of assistance *before* the semester starts, contact the CS Department Office staff.
 - We are open 9 – 5pm every day.
 - Email: csadmin@cs.gmu.edu

What Happens Next?

- Activate your Mason ID and password
- Take the Math Placement Test
- Use PatriotWeb to determine the day/times for the classes that you want to take
- Register on PatriotWeb.
 - Go to the registration site at the time and location listed for Orientation.
- Any questions?